Promoting Behavior Change After Cancer:

Physical Activity

Kerry S. Courneya, PhD

Professor and CIHR Investigator

University of Alberta

Edmonton, AB, Canada

Progression of Behavioral Research

- does the behavior have important outcomes?
- what is the prevalence of the behavior?
- what are the predictors of the behavior?
- how can the behavior be changed?

Outcomes of Physical Activity in Cancer Survivors

- > 70 studies on exercise in cancer survivors.
- half have examined breast cancer survivors.
- most tested ACSM vigorous exercise.
- almost all show positive benefits to QOL.
- safety, feasibility, and efficacy (improved fitness, fatigue, mood, overall QOL).

Prevalence of Physical Activity in Cancer Survivors

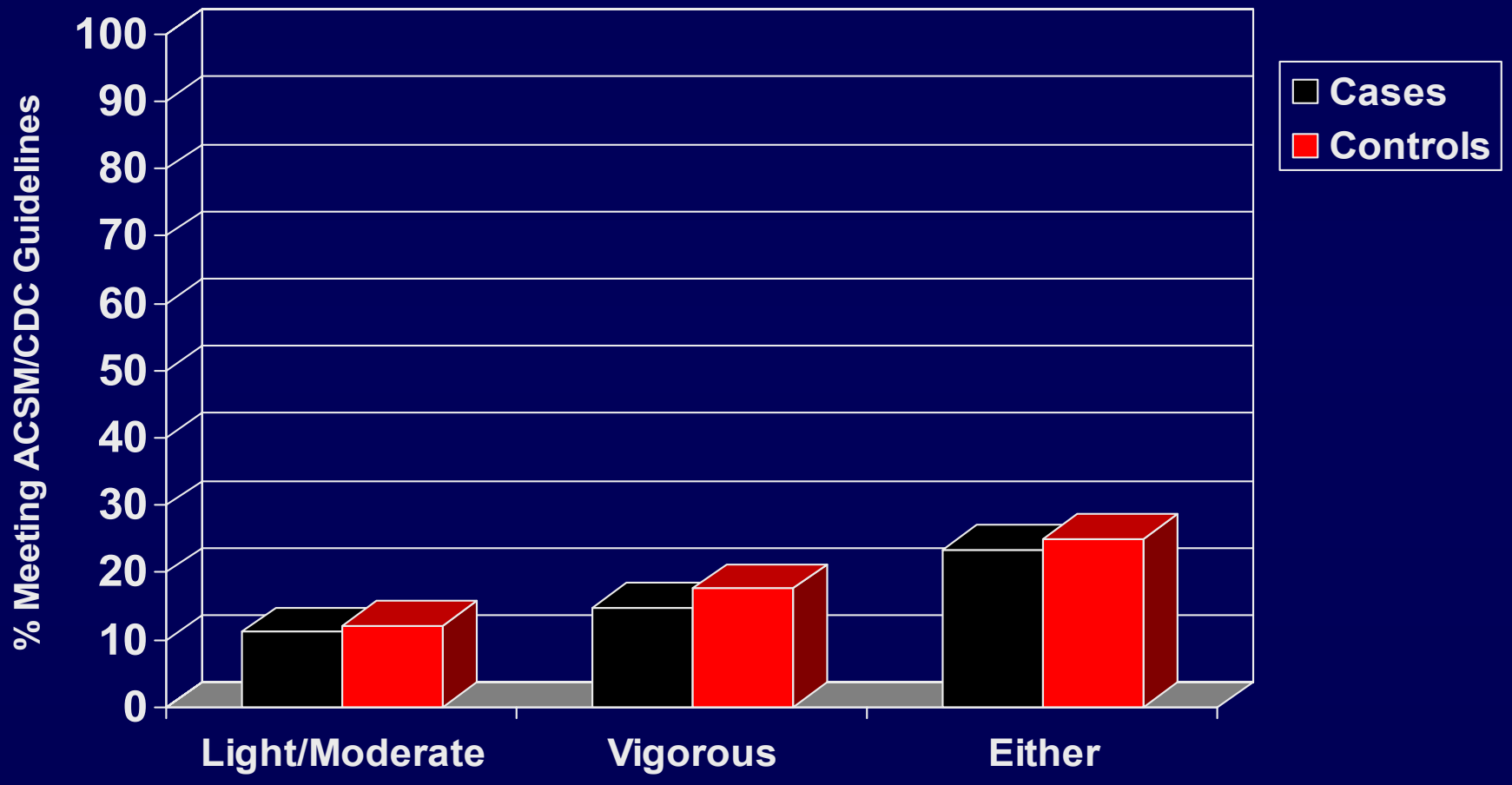
- there are really no guidelines for cancer survivors and they will likely vary depending on many different factors (disease, treatments, etc.).
- how best to measure the effects of cancer (diagnosis and treatments) on PA behavior?
  - compare current PA of survivors with matched group.
  - ask cancer survivors to report PA during different cancer-related time periods and calculate change.
  - ask directly about change.

Prevalence of Physical Activity in Cancer Survivors

- U.S. national health interview survey (NHIS).
- 335 breast cancer cases and 16,880 controls.
- 66 years; 40% at least high school.
- 10 years postdiagnosis.
- asked for current PA levels.

(Blanchard et al. *Behavioral Medicine* 2003;28:140-49)

Percentage Meeting ACSM/CDC Guidelines (>150 or 60 minutes/week)



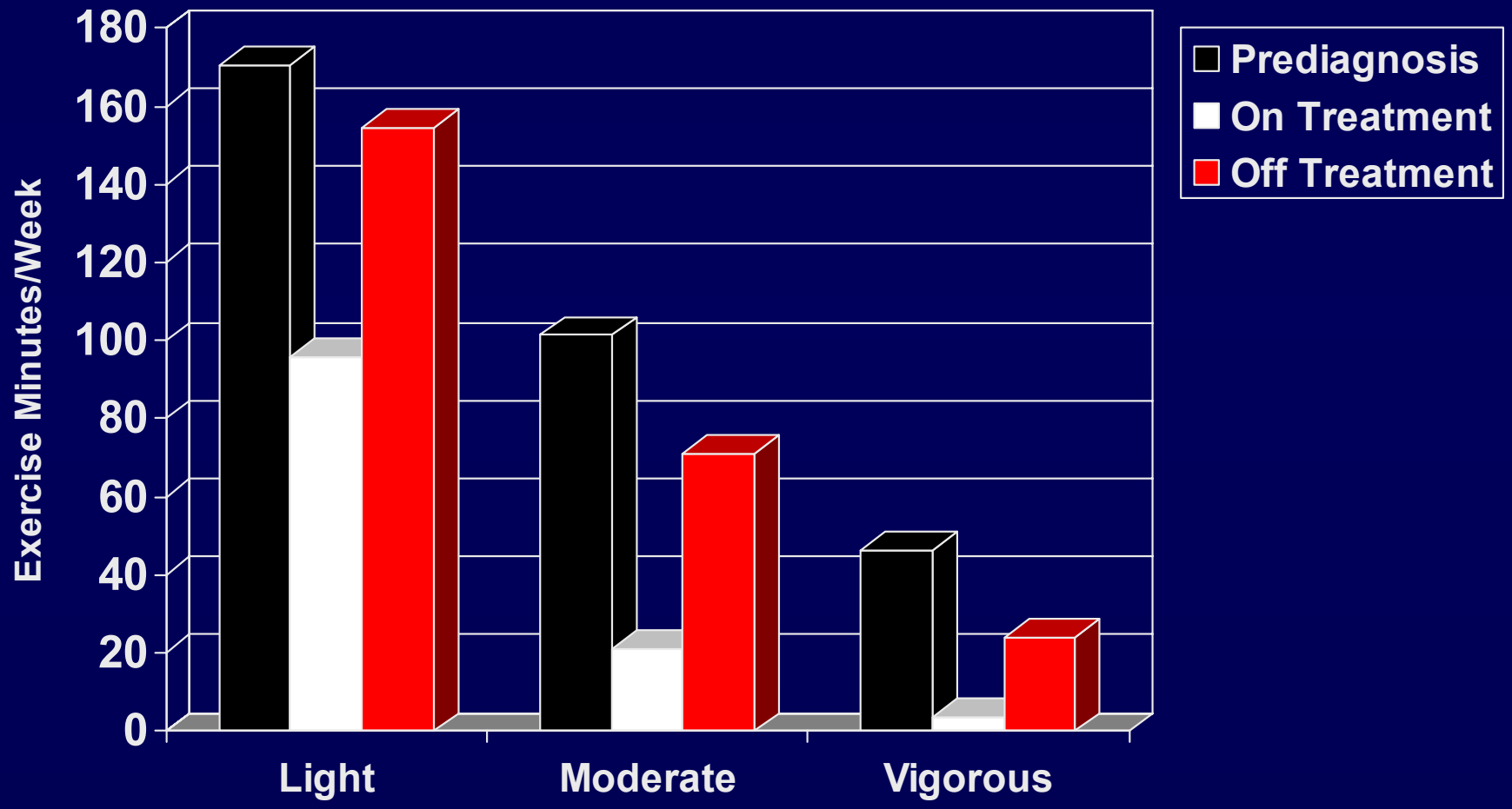
(Blanchard et al. *Behavioral Medicine* 2003;28:140-49)

Prevalence of Physical Activity in Cancer Survivors

- population-based survey in Alberta.
- 438/830 (53%) NHL cancer survivors.
- 61 years (SD=13); 52% male; 29% university degree; 34% employed.
- 62 months (SD=25) since diagnosis; 80% chemotherapy.
- ask to recall exercise at three time points.

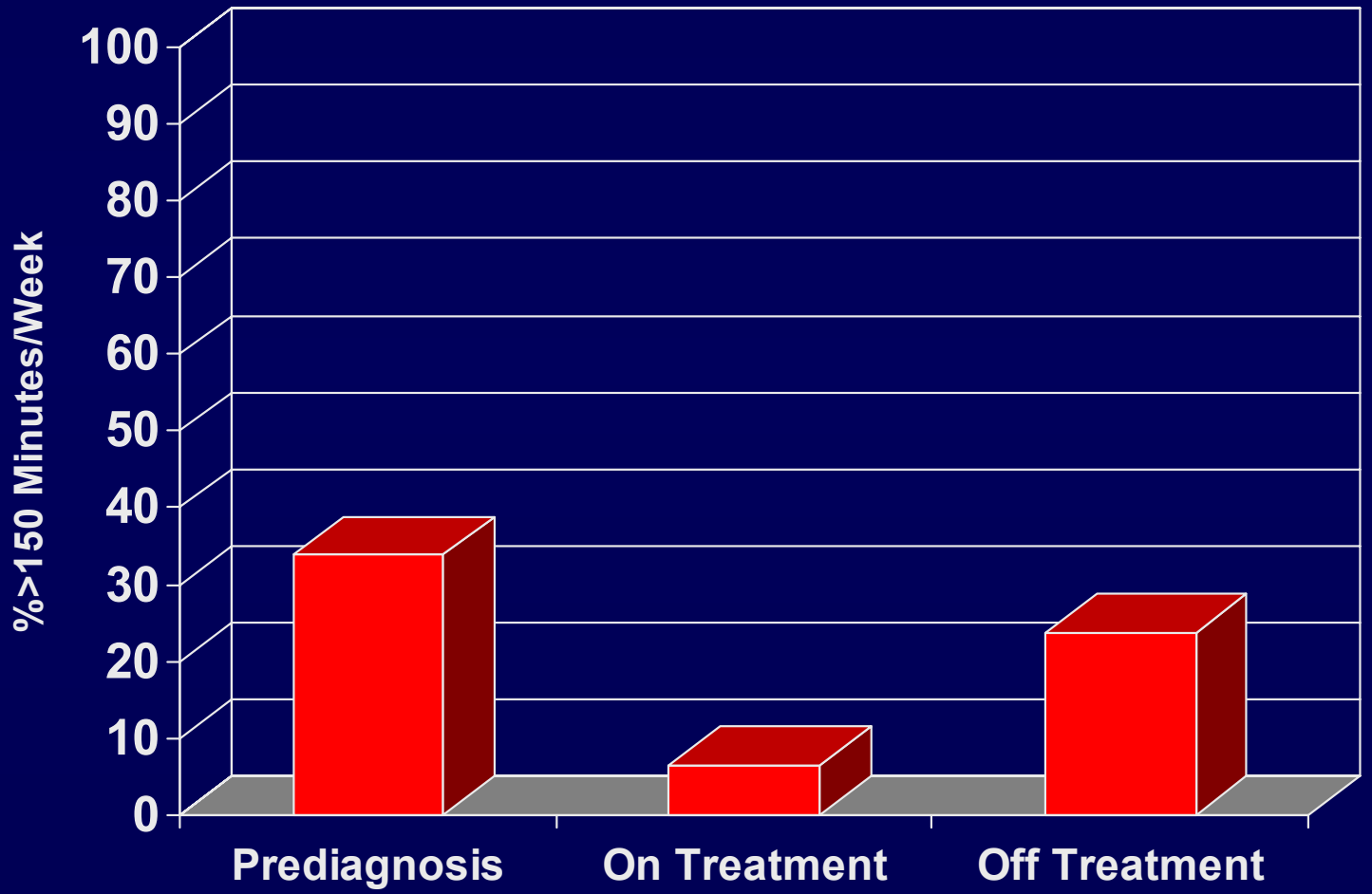
(Vallance et al. submitted)

Weekly Exercise Minutes Across the Cancer Experience (438 NHL survivors)



(Valance et al. submitted)

Percentage Meeting ACSM/CDC Guidelines (>150 minutes/week)



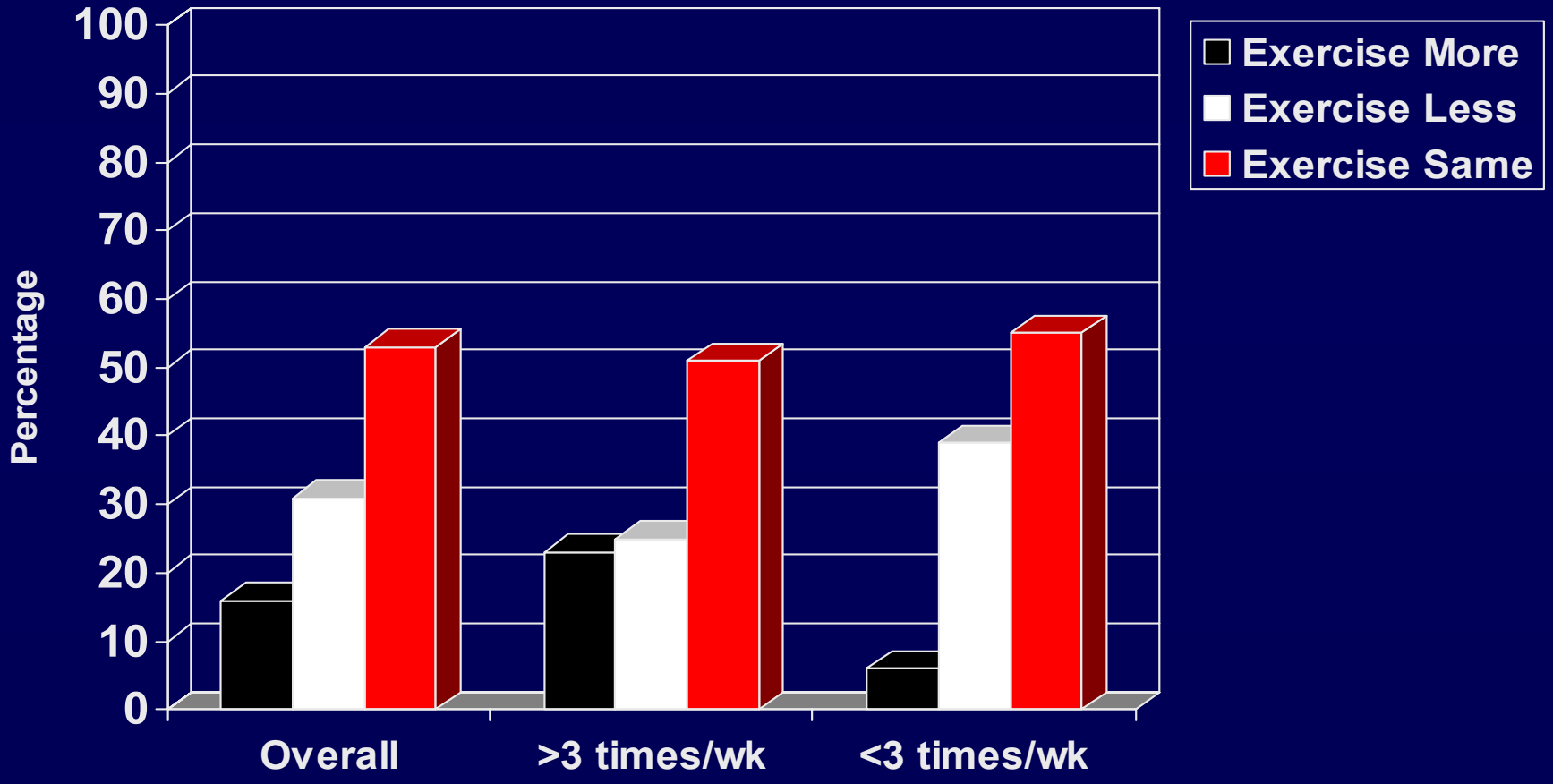
(Valance et al. submitted)

Prevalence of Physical Activity in Cancer Survivors

- convenience sample at 4 outpatient clinics in U.S.
- 352/572 (62%) mixed cancer survivors.
- 60 years; 71% female; 88% at least high school.
- 49% breast; 44% within 1 year diagnosis.
- asked if exercise had changed since diagnosis.

(Blanchard et al. *Am. J. Health Beh.* 2003;27:246-56)

Change in Exercise Levels Since Cancer Diagnosis by Current Exercise



(Blanchard et al. *Am. J. Health Beh.* 2003;27:246-56)

Limitations of Prevalence Studies

- early studies used many different cut-points.
  - most now use ACSM/CDC guidelines.
  - what are the guidelines for cancer survivors?
- few comparisons to general population.
  - are these really needed?
  - is change since diagnosis a better indicator?
  - no change studies have used a prospective design.
- estimates of PA are on the high side.
  - self-reports lead to over estimates (fitness testing).
  - selection bias from transparent studies (mask study).

Predictors of Physical Activity in Cancer Survivors

- some descriptive studies examining medical and demographic factors.
- most theoretical studies have examined the theory of planned behavior.
- some studies have examined other social cognitive models.

Predictors of Physical Activity in Cancer Survivors

- 812 breast cancer survivors (HEAL study).
- within 1 year of diagnosis.
- 55 years (SD=6); 95% white; 96% completed HS.
- 82% in situ/stage I; 30% chemotherapy.
- ask to recall exercise 1 year before diagnosis and in the past month.

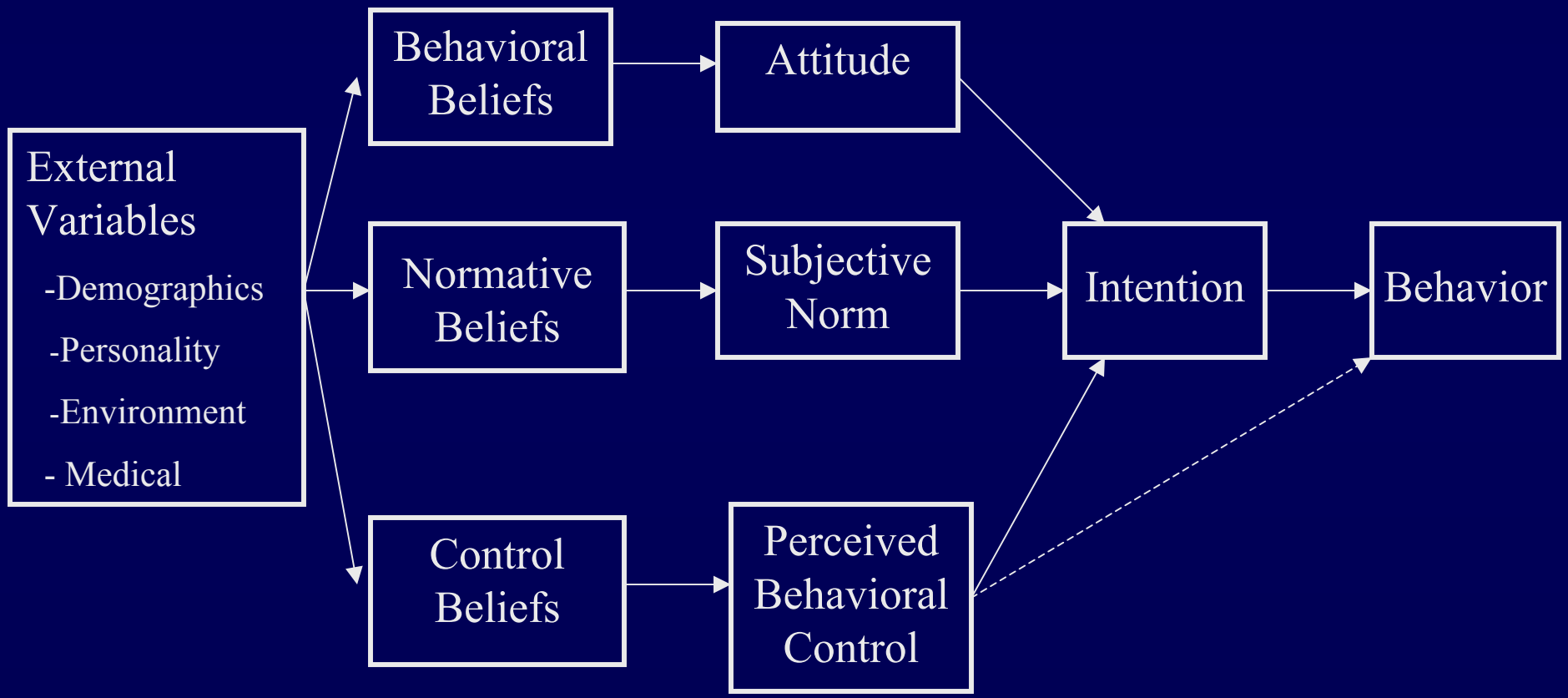
(Irwin et al. *Cancer* 2003;97:1746-57)

Predictors of Physical Activity in Cancer Survivors

- overall decrease in total PA of 2 hrs/week (11%).
- > decrease in sports PA in women treated with RT/CT (50%) than surgery alone (24%) or RT alone (23%).
- > decrease in sports PA in obese women (41%) than normal weight women (24%).

(Irwin et al. *Cancer* 2003;97:1746-57)

Theory of Planned Behavior (Ajzen, 1991)



Predictors of Physical Activity in Cancer Survivors

Study	Sample	INT	PBC	R^2
Courneya et al. (1997)	110 CRC	.29*	.28*	.22*
Courneya et al. (1999)	164 BC	.26*	.22*	.14*
Courneya et al. (1999)	66 CRC	.45*	.21*	.30*
Courneya et al. (2000)	37 BMT	.32*	.33*	.36*
Courneya et al. (2001)	24 BC	.64*	.10	.35*
Blanchard et al. (2002)	83 BC	.47*	.15	.32*
	46 PC	.50*	.15	.37*
Rhodes et al. (2003)	272 MC	.49*	.15*	.34*

Predictors of PA Intentions in Cancer Survivors

Study	Sample	ATT	PBC	SN	R^2
Courneya et al. (1997)	110 CRC	.45*	.00	.15	.31*
Courneya et al. (1999)	164 BC	.29*	.04	.30*	.23*
Courneya et al. (1999)	66 CRC	.43*	ns	ns	.23*
Courneya et al. (2000)	37 BMT	.49*	.42*	.05	.68*
Courneya et al. (2001)	24 BC	.32	.33*	.58*	.49*
Blanchard et al. (2002)	83 BC	.27*	.36*	.20*	.45*
	46 PC	.05	.59*	.08	.36*
Rhodes et al. (2003)	272 MC	.25*	.48*	.13*	.46*

Limitations of Predictor Studies

- very few studies have been conducted.
- perhaps premature except for breast cancer.
- most have been on the TPB.
- environmental factors have been neglected.
- relatively small samples.
- mostly self-reports of exercise.

Interventions to Promote Physical Activity in Cancer Survivors

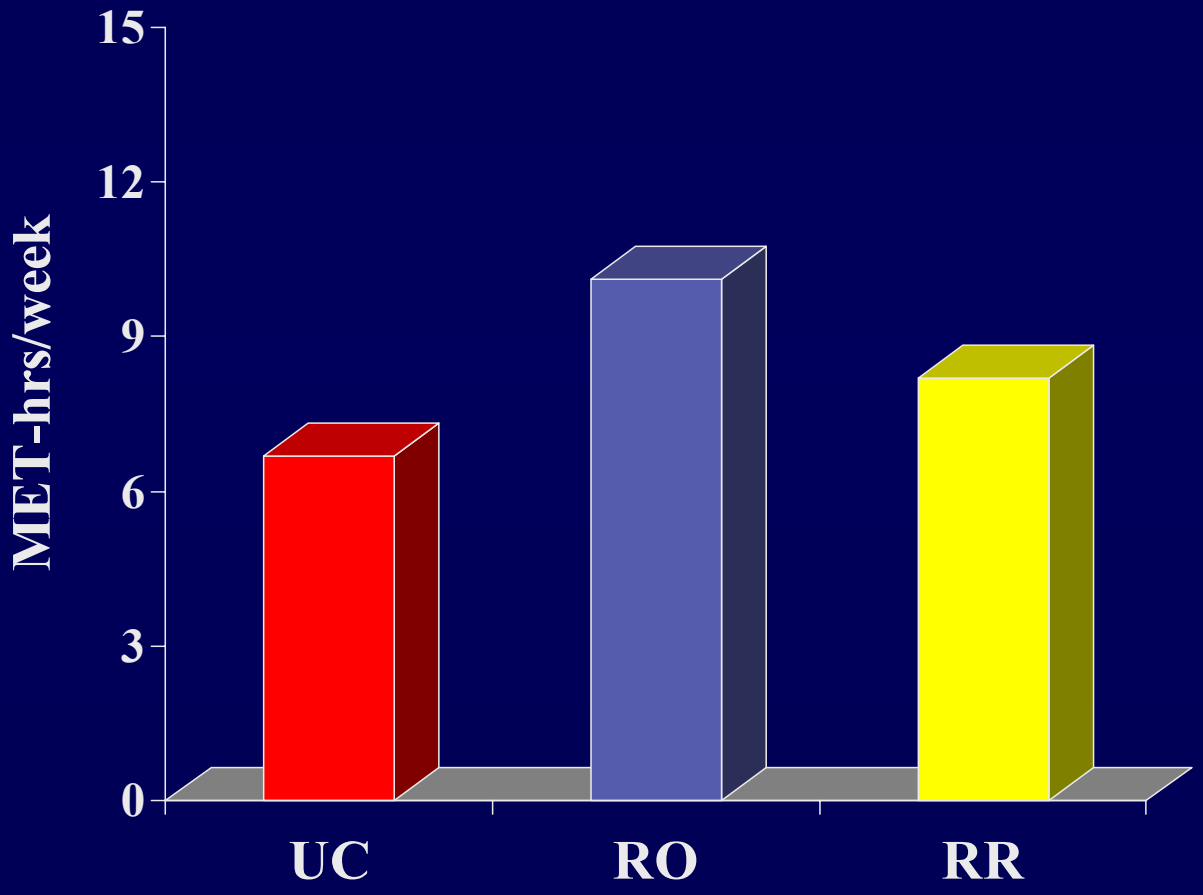
- **Outcomes Studies (PA as independent variable)**
  - primary interest is the outcomes of PA.
  - PA is a means to an end (manipulation check).
  - behavioral support may be provided.
  - control group is asked not to change PA.
- **Behavior Change (PA as dependent variable)**
  - primary interest is change in PA.
  - control group is not asked anything or is given advice to exercise with no intervention.

Oncologist Recommendation to Exercise (ONCORE) Trial

- RCT comparing two oncologist exercise recommendations to usual care in 329 newly diagnosed BC survivors.
- recommendation during primary treatment consultation.
- primary outcome was self-reported exercise at 5 weeks completed by telephone.

(Jones et al. *ABM* in press)

MET-hrs/week

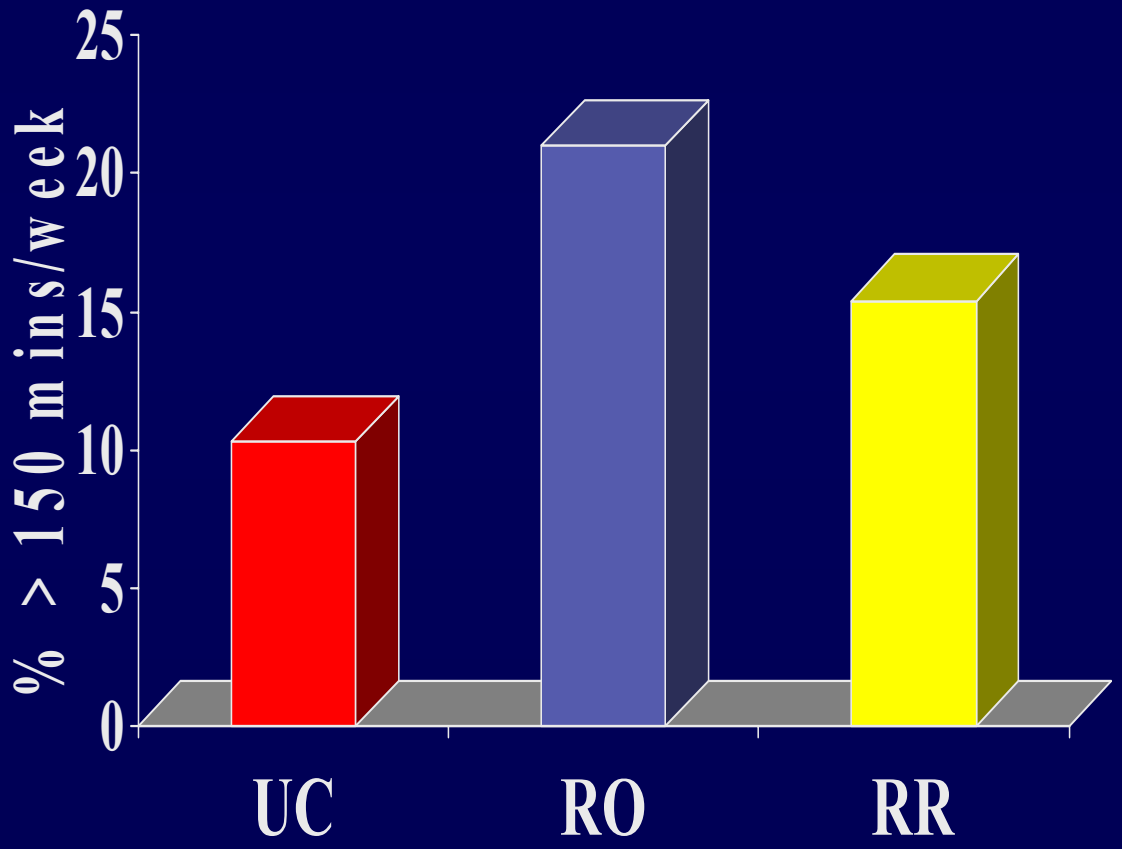


RO-UC= 3.4
CI=0.7 to 6.1
p=.011

RR-UC= 1.5
CI=-1.0 to 4.0
p=.244

(Jones et al. *ABM* in press)

ACSM/CDC (% ≥150mins/week)



RO-UC= 10.7
CI=0.8 to 20.3
p=.029

RR-UC= 5.2
CI=-4.0 to 13.9
p=.303

(Jones et al. *ABM* in press)

Limitations of Intervention Studies

- very limited research at this time.
- perhaps premature except for breast cancer.
- lots of good research from elsewhere that can be applied to cancer survivors.
- need to focus on issues unique to cancer survivors (e.g., motives, barriers, oncologists, cancer agencies, cancer centers).

Summary

- good evidence that PA enhances QOL in breast cancer survivors, especially posttreatment.
- PA will probably enhance QOL for most cancer survivor groups post/off treatment.
- PA may enhance QOL for most cancer survivors during treatments.
- unknown if PA will reduce the risk of recurrence and extend survival in cancer survivors.

Summary (continued)

- PA is low in cancer survivors but it is unknown if it is lower than other groups.
- PA decreases from prediagnosis levels and is lower during on versus off treatment periods.
- PA is predicted by social cognitive beliefs and some medical and demographic variables.
- oncologists may play a small but important role in promoting PA to cancer survivors.

Acknowledgements

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